Dr. Shibo Wang

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HIGHLIGHTS

Expert in reservoir processes (e.g., oil/CO_2/brine displacement, interfacial and transport phenomena)

- Over 7 years of research experience with reservoir properties characterization and multiphase fluid displacement (e.g., capillary pressure, saturation, permeability, rock and fluid properties, petrophysics, wettability, rheology, interfacial tension) pertaining to CO_2 sequestration, enhanced oil recovery (EOR) and hydraulic fracturing
- State-of-the-art skills in high pressure high temperature (HPHT) experimentation
- Experienced modeler in multiphase flow, fluid dynamics, and finite element/difference analysis (FEA/FDA)
- Additional work in lubrication/tribology, fate and transport modeling, energy efficiency, stochastic analysis, electrical resistivity, data analysis

Certification: Engineer in Training (EIT)
Stanford University Reservoir Geomechanics Certificate (Completing)

Distinctions: Author/co-author on 10+ peer-reviewed articles in top-tier scientific journals, #1 GPA in cohort, winner of 10+ research awards, co-inventor on US provisional patent

Leadership, Communication and Teamwork Skills:

- Worked extensively in 8 teams, led 10+ interdisciplinary research projects, mentored 17 team members
- Well-recognized effective communicator and problem solver

Software Skills: MATLAB, ABAQUS, C, LabVIEW, Crystal Ball, PHREEQC II, etc.

WORKING & RESEARCH EXPERIENCES

Lawrence Berkeley National Laboratory, Geological Postdoctoral Researcher 2013.3 to Present

Reservoir Processes and Engineering, EOR, CO_2 Sequestration, Hydraulic Fracturing

- Characterize capillary pressure-saturation relationship with oil and CO_2 for sandstone and carbonate reservoirs
- Conduct surfactant (e.g., SDS, Triton X-100) flooding and CO_2 flooding in cores and packed columns
- Study oil/CO_2/brine displacement, transport, snap-off and redisual trapping mechanism in porous media
- Investigate reservoir rock and fluid properties, interfacial phenomena and its mechanism
- Improve upscaling theories

University of Virginia, Graduate Research Assistant 2007.9 to 2013.1

Reservoir Properties Characterization, CO_2 Sequestration, EOR

- Characterized rock properties (e.g., wettability, adhesion) with supercritical CO_2
- Investigated fluid properties (e.g., rheology) of supercritical CO_2 and brine mixtures
- Derived model of multiphase flow fluid mechanics through porous media under EOR and CO_2 sequestration reservoir conditions and evaluated roles of important geophysical, geochemical and operational parameters
- Devised and built a porous media column to validate multiphase flow mechanisms in reservoir
- Studied upscaling methods to bridge pore scale and reservoir scale modeling

Lubrication and Tribology, Green Engineering and Manufacturing

- Invented gas expended lubricants with a 20% increase in energy efficiency, determined the thermoelastichydrodynamic properties, rheology and tribology
- Created a finite element/difference modeling framework to accurately simulate penetration of lubricants into cutting zone and studied tool tribology in advanced manufacturing processes

EDUCATION

University of Virginia (UVa), Charlottesville, VA

- **Ph.D.** Civil and Environmental Engineering **GPA: 4.0/4.0** 2009.6 to 2013.1
- **M.E.** Civil and Environmental Engineering **GPA: 4.03/4.0 (A+=4.33), Top 1** 2007.8 to 2009.5

Dalian University of Technology (DUT), Dalian, China

- **B.S.** Environmental (Chemical) Engineering **GPA: 3.86/4.0, Top 5%** 2003.9 to 2007.6

SELECTED PUBLICATIONS & PATENTS

Journal Articles and Conference Proceedings (All Journals are Top Tier in Related Fields)

- **S. Wang**, T. Tokunaga, W.Dong. (2014) "Capillary pressure and saturation relations for supercritical CO_2 and brine in sandstone and carbonate reservoirs", *ACS – Environmental Science and Technology* (In Preparation)
- **S. Wang**, T. Tokunaga. (2014) "Non-wetting phase (oil, CO_2 and air) displacement mechanism in sandstone and carbonate reservoirs", *ACS – Environmental Science and Technology* (In Preparation)
- **S. Wang**, T. Tokunaga, J. Wan, A. Clarens. (2014) "Wettability phenomena in geologic CO_2 sequestration and its mechanism", *ACS – Environmental Science and Technology Letters* (In Preparation)
- **S. Wang**, Z. Tao, S. Persily, A. Clarens. (2013) "CO_2 adhesion on hydrated mineral surfaces", *ACS – Environmental Science and Technology*
- **S. Wang**, I. Edwards, A. Clarens. (2013) "Wettability phenomena at the CO_2-brine-mineral interface: implications for geologic carbon sequestration", *ACS – Environmental Science and Technology*
- **S. Wang** and A. Clarens. (2012) "The effects of CO_2-brine rheology on leakage processes in geologic carbon sequestration", *AGU – Water Resources Research*
- **S. Wang** and A. Clarens. (2012) "Analytical model of metalworking fluid penetration into the flank cutting zone in orthogonal cutting", *ASME – Journal of Manufacturing Processes*
- **S. Wang** and A. Clarens. (2012) "Improved force balance for predicting vertical migration of CO_2 from geologic sequestration sites", *SPE – CMTC Conference*
- Y. Ouyang, **S. Wang**, J. Li, P. Riehl, M. Begley, J. Landers. (2013) "Rapid patterning of tunable hydrophobic valves on disposable microchips by laser printer lithography", *RSC – Lab on a Chip*
- A. Clarens, A. Younan, **S. Wang**, P. Allaire. (2010) "Feasibility of gas-expanded lubricants for increased energy efficiency in tilting-pad journal bearings", *ASME – Journal of Tribology*
- Y. Han, X. Quan, S. Chen, **S. Wang**, Y. Zhang. (2007) "Electrochemical enhancement of adsorption capacity of activated carbon fibers and their surface physicochemical characterizations", *ISE– Electrochimica Acta*

Patent

- A. Clarens, P. Allaire, A. Younan, **S. Wang**. (2010) "Gas-expanded lubricants for increased energy efficiency and related method and system", PCT/US2010/052878

AWARDS & HONORS (RECENT TEN YEARS)

Award for Excellence in Research (Only Winner), Department of CEE, UVa 2013.5
Chinese Government Scholarship for Outstanding Self-Financed Students 2013.1
Huskey Award for Outstanding Research-"Two-Hoos" Team Research, UVa 2012.3
Student Travel Grant Award, 11th CCUS Conference, Pittsburgh, PA 2012.2
Student Travel Grant Award, 2011 AGU Fall Meeting, San Francisco, CA 2011.9
Graduate Teaching Award (Only Winner), Department of CEE, UVa 2011.5
Graduate Student Award (Ranked No. 1), American Chemical Society 2010.2
ConocoPhillips – Penn State Energy Prize - Finalist and 1st Runner Up 2009.9
- Project on "Gas expanded lubricants", awarded $75,000 research funding

Outstanding Undergraduate Thesis Award, DUT 2007.9
"A" Level for Students' Research Ability (Highest Rating), DUT 2007.5
Outstanding Student Scholarships in three consecutive years**,** DUT 2004 to 2007

PROFESSIONAL ACTIVITIES & AFFILIATIONS

Presenter: delivered 10+ oral/poster presentations at e.g., Society of Exploration Geophysicists Annual Meeting, American Geophysical Union Fall Meeting, Carbon Capture Utilization and Sequestration Conference, etc.

Reviewer: for 10+ prestigious scientific journals in energy and environment field, e.g., SPE Journal, SPE Reservoir Evaluation & Engineering, Transport in Porous Media, Journal of Petroleum Science and Engineering, Environmental Science and Technology, Fuel, Geofluids, Water Resources Research, etc.

Affiliation: with 8 professional associations e.g., Society of Petroleum Engineers, Society of Exploration Geophysicists, American Geophysical Union, American Chemical Society, etc.

LEADERSHIP, COMMUNITY SERVICE, SOCIAL & BUSINESS ACTIVITIES

Member, Distinguished Scientist Seminar Committee, LBNL	2014.3 to Present
Co-Founder, Running River Investment LLC, California	2013.9 to Present
Co-Founder and Vice President, US-China Business and Finance Club, UVa	2012.3 to Present
Co-Founder, Sinora Business and Financial Club, US, China and Europe	2011.1 to Present
Vice President, Graduate Engineering Student Council, UVa	2010.7 to 2011.7
Champion, CSSS Karaoke Singing Contest, UVa	2010.11

Co-Organizer and Volunteer

- Charity Concert for Haiti Earthquake, Charlottesville, VA (raised $30,000) 2010.2
- Charity Concert Series for 2008.5.12 Earthquake in China (raised $10,000) 2008.5